For Immediate Release  
Contact: Dan Meyers, 303.724.5377, dan.meyers@ucdenver.edu

Technology grant will help personalize medicine
Two new devices guide treatment
based on a patient’s DNA code

AURORA, Colo. (Jan.25, 2011) – A federal grant totaling $2.2 million shows how the University of Colorado School of Medicine and Anschutz Medical Campus are using technology to advance the cutting-edge field of personalized medicine -- tailoring treatments to the individual based on their genetic make-up.

The grant also highlights the commitment of the school’s Colorado Clinical & Translational Sciences Institute (CCTSI) to bring scientific discoveries to the bedside and to train the next generation of researchers.

The grant will pay for a new PET-CT scanner devoted to research that can precisely detect cancer, brain disorders and other illnesses, and guide treatment.

It also will buy a Next Generation Deep DNA Sequencer. This machine will dramatically cut the cost, time and staffing needed to examine a person’s genome.

The grants were made to the CCTSI, which is dedicated to translating research discoveries into improved diagnostics, treatments and preventative and lifestyle interventions. The National Institutes of Health awarded the money.

The more doctors know about a person’s genetic make-up, the better the treatment can be. This is already happening with some diseases. For example, dosing for the drug coumarin following a heart attack can now be guided by knowledge of the patient's personal DNA code.

The PET-CT scanner will let researchers peer deep into the human body. It creates a high-resolution, three-dimensional image of the body that is fused with images of radiotracers (a small amount of radioactive material injected into the body). PET-CT provides images of disease, measures the delivery of a drug to diseased tissues and measures effectiveness of the molecular treatment without harming the patient.

“Individualized therapies will reduce patient suffering and extend productive life by selecting the most effective therapeutic weapon for the specific individual,” says Gerald D. Dodd, III, MD,
chair of the Department of Radiology. “Our children and grand-children will lead better lives due to the studies conducted today.”

The Deep DNA Sequencer has revolutionized medical research, and will transform patient diagnosis and treatment. In 2003, thousands of scientists working around the world on the Human Genome Project unveiled the human instruction code – the DNA sequence of the human genome. With that knowledge came the promise of tailoring treatment based on a person’s unique instruction code. But the cost of first cracking that code was enormous – several billion dollars. To make information about a person’s genome practical for medicine the process had to become quicker and cheaper.

The device coming to Colorado will provide the sequence of a human genome for $10,000 (a 300,000-fold reduction in cost from that first genome sequence), in about a week (about a 500-fold reduction in time) through the effort of as few as three people. And the cost is expected to come down rapidly while efficiency goes up.

“This instrument brings personalized medicine to the threshold of our clinics,” says Mark Johnston, PhD, chair of the Department of Biochemistry and Molecular Genetics. “It is likely that, because of DNA sequencers such as the one we’re bringing to Colorado, reading a patient's personal DNA code will be a routine part of the clinical workup within the next five years.”

The medical school implemented the first generation of this technology in February 2009, and has provided DNA sequence data to more than 30 investigators at the University of Colorado on the Anschutz Medical Campus and the Boulder Campus.

“In the big picture, this grant furthers our ability to accelerate the pace with which we can bring new discoveries to improve the health and lives of people in Colorado,” said Ronald J. Sokol, MD, director and principal investigator of the CCTSI. “As an organization focused on putting science to work for patients, we are not only a medical school resource but also a Colorado resource.”

Faculty at the University of Colorado School of Medicine work to advance science and improve care. These faculty members include physicians, educators and scientists at University of Colorado Hospital, The Children’s Hospital, Denver Health, National Jewish Health, and the Denver Veterans Affairs Medical Center. The school is located on the Anschutz Medical Campus, one of four campuses in the University of Colorado system. To learn more about the medical school’s care, education, research and community engagement, please visit its website. For additional news and information, please visit the UC Denver newsroom online.

The CCTSI is an interdisciplinary, collaborative research and education enterprise of the University of Colorado Denver and Boulder, six hospitals and health care organizations and more than 20 community-academic partnerships in the state of Colorado.

###